

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT Application of
SHIRAISHI et al.

Group Art Unit: 3724

Application No. 10/783,022

Examiner: Payer

Filed: February 23, 2004

For: DEVICE FOR REMOVING COATING ON OPTICAL FIBER

* * * * *

June 2, 2006

APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an appeal from the final rejection of claims 1-14 of the subject application.

This Appeal Brief is submitted in triplicate as required by 37 C.F.R. § 1.192 (a).

1. Real Party in Interest:

This application is assigned to SHOWA ELECTRIC WIRE & CABLE CO.

2. Related Appeals and Interferences:

There are no other appeals or interferences known to Appellants, the Appellants' legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

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3. Status of Claims:

Claims 1-14 are pending in this application. Claim 15 stands withdrawn from consideration pursuant to a Restriction Requirement.

The rejection of claims 1-14 is appealed. Please see the Appendix for a copy of the claims under appeal as amended by the Amendment Under Rule 116 filed herewith of even date.

4. Status of any Amendment Filed Subsequent to Final Rejection:

An Amendment of the claims was made after Final Office Action. That Amendment amends the claims as requested by the Examiner to reduce the issues for Appeal.

A Notice of Appeal was filed herewith.

5. Concise Explanation of the Invention:

Claim 1 provides a device for removing a covering layer of an optical fiber, the device comprising:

a receiver body for receiving an optical fiber having a covering layer to be removed; and

a cutting blade adaptive to be relatively moved toward said receiver body for cutting the covering layer of the optical fiber, wherein said cutting blade comprises an elastic plastic, said cutting blade has an edge surface substantially perpendicular to side surfaces of the cutting blade, and said receiver body is sized such that when an optical fiber is set on a surface of said receiver body opposite to said cutting blade the length of the optical fiber is longer than the thickness of said cutting blade, and said cutting blade has a bending elasticity in a range of 900 - 20,000 MPa. Support for this claim can be

found in the originally filed application, including at page 2, lines 20-32; page 4, line 21 through page 5, line 10; and page 5, lines 24-26.

Claim 2 recites a device for removing a covering layer of an optical fiber, the device comprising:

a receiver body for receiving an optical fiber having a covering layer to be removed; and

a cutting blade adaptive to be relatively moved toward said receiver body for cutting the covering layer of the optical fiber, wherein said cutting blade comprises an elastic plastic, said cutting blade has an edge surface substantially perpendicular to side surfaces of the cutting blade, and said receiver body is sized such that when an optical fiber is set on a surface of said receiver body opposite to said cutting blade the length of the optical fiber is longer than the thickness of said cutting blade, and said cutting blade has a thickness in a range of 0.06 - 1 mm. Support for this claim can be found in the originally filed application, including at page 2, lines 20-32; page 4, line 21 through page 5, line 10; and page 5, lines 16 and 24-26.

Claims 3, 4, and 6 recite a device for removing a covering layer of an optical fiber according to claims 1, 2, and 5 further comprising a guide means for guiding the optical fiber to a removing position between said receiver body and the cutting blade. Support for these claims can be found in the present specification including at 3, lines 10-12 and page 8, lines 19-24.

Claim 5 provides device for removing a covering layer of an optical fiber according to claim 1, wherein the cutting blade has a thickness in a range of 0.06 - 1 mm. Base for this claim can be found in the originally filed application including at page 5, line 16.

Claim 7 recites a device for removing a covering layer of an optical fiber, the device comprising:

first and second cutting blades for cutting a covering layer of an optical fiber by moving toward each other, wherein each of said cutting blades comprises an elastic plastic, each of said cutting blades have edge surfaces substantially perpendicular to

side surfaces of the cutting blades, and each of said cutting blades has a thickness in a range of 0.06 - 1 mm. Support for this claim can be found in the originally filed application, including at page 2, lines 20-32; page 4, line 21 through page 5, line 10; and page 5, lines 16 and 24-26.

Claim 8 recites a device for removing a covering layer of an optical fiber, the device comprising:

first and second cutting blades for cutting a covering layer of an optical fiber by moving toward each other, wherein each of said cutting blades comprises elastic plastics, each of said cutting blades have edge surfaces substantially perpendicular to side surfaces of the cutting blades, and each of said cutting blades has a bending elasticity in a range of 900 - 20,000 MPa. Support for this claim can be found in the originally filed application, including at page 2, lines 20-32; page 4, line 21 through page 5, line 10; and page 5, lines 24-26.

Claims 9, 10, and 12 recite a device for removing a covering layer of an optical fiber according to claim 7, 8, and 11 further comprising a guide means for moving the first and second cutting blades toward each other so that edges of the cutting blades face each other. Basis for these claims can be found in the present specification including at page 13, lines 1-9.

Claim 11 recites a device for removing a covering layer of an optical fiber, the device comprising:

first and second cutting blades for cutting a covering layer of an optical fiber by moving toward each other, wherein each of said cutting blades comprises an elastic plastic, each of said cutting blades has an edge surface substantially perpendicular to side surfaces of the cutting blade, and each of said cutting blades has a thickness in a range of 0.06 - 1 mm and a bending elasticity in a range of 900 - 20,000 MPa. Support for this claim can be found in the originally filed application, including at page 2, lines 20-32; page 4, line 21 through page 5, line 10; and page 5, lines 16 and 24-26.

Claims 13 and 14 recite a device for removing a covering layer of an optical fiber according to claims 1 and 2, wherein a length of the cutting blade and the receiver body

are always substantially parallel. Support for these claims can be found in the present specification including at Figs. 1 and 8.

6. Issues

- I. Whether claims 1-12 are patentable under 35 U.S.C. § 103 over U.S. Patent No. 4,059,892 (Siden).
- II. Whether claims 1, 2, 13 and 14 are patentable under 35 U.S.C. § 103 over Japanese Patent No. 2 142803 (JP '803).

7. Grouping of Claims:

With regard to the obviousness rejection based on Siden, no claims stand or fall together. Arguments for each claim have been presented and, thus, each of claims 1-12 does not stand or fall with any other claim.

With regard to the obviousness rejection based on JP '803, claims 1 and 13 stand or fall together.

With regard to the obviousness rejection based on JP '803, claims 2 and 14 stand or fall together.

8. Arguments

I. **Claims 1-12 are patentable under 35 U.S.C. § 103 over Siden.**

In the final Office Action, the Examiner rejected claims 1-12 under 35 U.S.C. § 103 over Siden. Appellants respectfully submit that the Examiner has not provided a *prima facie* case of obviousness and even if a *prima facie* case has been provided, the claimed invention is not obvious from Siden for the following reasons.

The claimed invention is a device for removing the covering layer of an optical fiber. Optical fibers are formed from glass. In contrast, Siden teaches a device for removing insulation from a metal wire that conducts electricity. There is a vast difference between devices used for stripping electrical insulation (Siden) and devices for stripping the covering layer of an optical fiber (present invention). Thus, one of ordinary skill in the art would not be motivated to look to wire stripping device (Siden) to make a device for removing the outer layer of an optical fiber. For this reason alone, the Section 103 rejection should be withdrawn.

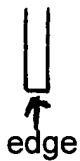
Even if one of ordinary skill in the art did look to Siden, the claimed cutting blades are very different from the cutting blades in Siden. Siden's cutting blades taper down to a sharp edge, which would damage a glass optical fiber. See column 3, lines 21-34 of Siden, which clearly teaches that blades 24 and 26 taper to a sharp edge. Siden's Blade 34 of Fig. 5 also tapers to a sharp edge as shown by the side view of blade 34 in Fig. 4. This sharp edge in Siden is used to strip electrical wires, and would damage an optical glass fiber.

Siden specifically teaches that the taper angle is less than 65°, preferably between 15 and 45°. "Greater angles ... have a tendency to bend away upon pulling of the wire, resulting in poor or no stripping of the wire." See column 3, lines 23-28. Thus, Siden strongly teaches away from taper angles greater than 65°.

In contrast, the cutting blades in the present invention do not have a taper to sharp point, i.e. the edge angle is substantially 90°. Siden clearly teaches away from using an edge angle of 90°, as discussed above since it would not strip a metal wire.

As recited in all pending claims, "said cutting blade has an edge surface substantially perpendicular to side surfaces of the cutting blade." The "side surfaces" of the blade are the front and back surfaces. The claimed edge is substantially flat, not tapered to a point, i.e. the edge angel is substantially 90°. See the edge shown in Figs. 5 and 11, and especially Figs. 16-19 of the present application, which shows no tapering to a sharp point.

Present Invention



Siden



The Examiner argues that:

Appellant argues, at page 8 of the Amendment, Appellant's cutting blades do not have a taper to sharp point, i.e. the edge angle is substantially 90 degrees. Siden clearly teaches away from using an edge angle of 90 degrees. On the contrary, Siden does show the cutting blade has an edge surface substantially perpendicular to side surfaces of the cutting blade as claimed. Referring to Siden's Figs. 2 and 4, a cutting blade (24/26/34) has an edge surface substantially perpendicular to side surfaces of the cutting blade (24/26/34) as claimed. The edge surface having an edge angle of 90 degrees is received in a recess of a block (20/22/32). [Emphasis in original.]

Appellants respectfully submit that the Examiner is improperly referring to the handle (blocks 22 and 32) of the blade in Siden as the edge. The edge of a blade is the cutting surface that contacts the optical fiber, not the handle. As shown in Figs. 2 and 4 of Siden, the edge of the blade that contacts the electrical wire is clearly tapered, as discussed above, which the Examiner does not rebut. In contrast, the presently claimed edge is not tapered to a sharp point.

It is well understood that claims should be interpreted in light of the specification, without reading limitations from the specification into the claims. From reading the present specification, it is clearly understood that Appellants use the term "edge" of a blade in its ordinary meaning as the surface of the blade that is used to cut an object. The edge of the blade is not the handle, and there is no support in the specification for the Examiner's interpretation of "edge" to mean any other part of the blade than the surface that is used to cut.

See page 13, lines 10-12 of the present specification, which teaches that "Figure

16, 17, 18 and 19 are enlarged views near the **edge** of cutting blades. The Figures shows one operation of the device according to the present invention. In each Figure, the picture of the **edge** of cutting blade was taken under the microscope." See also page 5, lines 24-28 of the present specification, which teaches that "the cutting blade does not have a sharp **edge** as a sharp cutting edge but it has an edge surface of a certain width perpendicular to the both sides of the blade. Therefore, the optical fiber main body is not pushed with a sharp edge." [Emphasis added.] Further, see page 12, lines 15-21 of the present specification, which teaches that "[a]s shown in Figure 14, when the optical fiber 50 is held between the cutting blades 29 and 32, and when their respective **edge** surfaces 29A and 32A come closer to each other, the **edge** surfaces 29A and 32A of the cutting blades 29 and 32, respectively, cut into the covering layer 52, and reach the optical fiber main body 51 (including the primary coating)." [Emphasis added.]

The claim term "edge" clearly refers only to the surface that is used to cut the object and not the handle of the blade. Thus, Appellant's respectfully submit that the Examiner's interpretation of "edge" to mean handle (blocks 22 and 32 of Siden) is improper. For these reasons, the Section 103 rejection of all claims 1-12 should be withdrawn.

Claims 1, 3, 5, 8, and 10-12 are also not obvious over Siden for the following reasons. On page 4 of the Office Action, the Examiner admits that Siden does not teach the claimed elasticity range of 900 – 20,000 MPa. Appellants respectfully submit that a person of ordinary skill in the art could not learn the claimed thickness and elasticity range, that is suitable for stripping a covering layer from an optical fiber, from a reference (Siden) which only teaches stripping insulation from an electrical wire. From page 5, lines 1-10 of the present specification, the claimed elasticity range provides the combination of easily cutting into the outer layer and avoiding scratching of the underlying optical glass fiber, and that "[t]he bending elasticity is specified in order to specify a plastic plate which would not damage the optical fiber main body or the non-peeled-off layer. That is, a plastic plate is used for a cutting blade 6, because optimal

hardness can be adjusted so that the primary and the secondary covering layers can be cut out without damaging the primary coating on the surface of the optical fiber.“ Furthermore, electrical wire strippers do not inherently teach the claimed pressure range to provide easy cutting into the outer layer in combination with avoidance of scratching an optical glass fiber. One of ordinary skill in the art cannot optimize what is not taught in Siden. For this reason alone, the claimed elasticity range cannot be obvious from Siden and the Section 103 rejection should be withdrawn.

Claims 2, 4, 5, 7, 9, 11 and 12 are also not obvious over Siden for the following reasons. On page 3 of the Office Action, the Examiner also admits that Siden does not teach the claimed cutting blade thickness of 0.06 – 1mm. Page 5, lines 16-28 of the present specification teaches that “[i]f the thickness is 0.06 mm or less, the strength may be too small. In addition, the blade may be too sharp and may damage the primary coating on the optical fiber. On the other hand, if the thickness is 1 mm or more, large force may be required to cut into the covering layers on the optical fiber, which may result in a breakage of the optical fiber main body due to large pressing force. Thus, appropriate thickness of the cutting blade 6 can enhance functions of cutting and peeling off the primary and the secondary covering layers without damaging the primary coating on the optical fiber surface. Thus, the cutting blade does not have a sharp edge as a sharp cutting edge but it has an edge surface of a certain width perpendicular to the both sides of the blade. Therefore, the optical fiber main body is not pushed with a sharp edge. Further effects of this configuration will be explained later with reference to Figure 13 etc.” Siden’s electrical wire stripper has a different blade structure and does not inherently teach the claimed blade thickness range to provide easy cutting into the outer layer in combination with avoidance of scratching an optical glass fiber. One of ordinary skill in the art cannot optimize what is not taught in Siden. For this reason alone, the claimed thickness range cannot be obvious from Siden and the Section 103 rejection should be withdrawn.

Claims 1-6 are also not obvious from Siden for the following reasons. Siden does not teach using a receiver body “sized such that when an optical fiber is set on a

surface of said receiver body opposite to said cutting blade the length of the optical fiber is longer than the thickness of said cutting blade." Siden does not teach using optical fiber so it cannot possibly teach sizing the receiver body in such a manner. For this reason alone, the Section 103 rejection should be withdrawn.

Claims 3, 4 and 6 recite guide means for guiding an optical fiber to a removing position. Siden does not teach or even suggest any guide means, and surely not a guide means for guiding optical fiber. For this reason alone, the Section 103 rejection should be withdrawn for claims 3, 4 and 6.

For all of the reasons advanced above, the Appellants submit that the claimed invention is not obvious over Siden and therefore withdrawal of the Section 103 rejection is respectfully requested.

II. Claims 1, 2, 13 and 14 are patentable under 35 U.S.C. § 103 over JP '803.

In the final Office Action, the Examiner rejected claims 1, 2, 13 and 14 under 35 U.S.C. § 103 over JP '803.

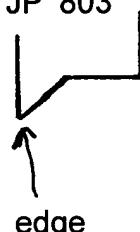
As discussed above, the claimed invention has an edge angle of substantially 90°. See the blade surface 6 shown in Figs. 5, 11, and 15-19 of the present application, which shows no tapering to a sharp point.

In contrast, see Figs. 1 and 2 of JP '803, which clearly show that the edge of the blade that contacts the optical fiber is tapered to sharp point.

Present Invention



JP '803



Appellants respectfully submit that the Examiner is once again improperly referring to the handle of a blade as an edge by stating “the edge surface that is facing the bent portion of the spring plate 1.” The edge of a blade contacts the object to be cut, not the handle. The “edge surface” the Examiner is referring to is not an “edge” of a blade, but rather the handle portion that is not used to cut an object. For the many reasons provided above, the claimed term “edge” is used in its ordinary meaning to refer to the surface that is used to cut an object, not the handle of a blade. For this reason alone, JP ‘803 does not teach or suggest the claimed invention and the Section 103 rejection should be withdrawn for all claims 1, 2, 13 and 14.

Claims 1 and 13 are also not obvious over JP ‘803 for the following reasons. On pages 5-6 of the Office Action, the Examiner admits that JP ‘803 does not teach the claimed elasticity range of 900 – 20,000 MPa. From page 5, lines 1-10 of the present specification, the claimed elasticity range provides the combination of easily cutting into the outer layer and avoiding scratching of the underlying optical glass fiber, and that “[t]he bending elasticity is specified in order to specify a plastic plate which would not damage the optical fiber main body or the non-peeled-off layer. That is, a plastic plate is used for a cutting blade 6, because optimal hardness can be adjusted so that the primary and the secondary covering layers can be cut out without damaging the primary coating on the surface of the optical fiber.” JP ‘803 provides no teaching on hardness and a very different blade structure. One of ordinary skill in the art cannot optimize what is not taught in JP ‘803. For this reason alone, the claimed elasticity range cannot be obvious from JP ‘803 and the Section 103 rejection should be withdrawn.

Claims 2 and 14 are also not obvious over JP ‘803 for the following reasons. On pages 5-6 of the Office Action, the Examiner also admits that JP ‘803 does not teach the claimed cutting blade thickness of 0.06 – 1mm. Page 5, lines 16-28 of the present specification teaches that “[i]f the thickness is 0.06 mm or less, the strength may be too small. In addition, the blade may be too sharp and may damage the primary coating on the optical fiber. On the other hand, if the thickness is 1 mm or more, large force may be required to cut into the covering layers on the optical fiber, which may result in a

breakage of the optical fiber main body due to large pressing force. Thus, appropriate thickness of the cutting blade 6 can enhance functions of cutting and peeling off the primary and the secondary covering layers without damaging the primary coating on the optical fiber surface. Thus, the cutting blade does not have a sharp edge as a sharp cutting edge but it has an edge surface of a certain width perpendicular to the both sides of the blade. Therefore, the optical fiber main body is not pushed with a sharp edge. Further effects of this configuration will be explained later with reference to Figure 13 etc.” JP ‘803 teaches to form a sharp edge as shown in Fig. 1, which is opposite of the claimed invention. Furthermore, by the shape shown in Fig. 1 of JP ‘803, the thickness of the blade is far greater than 1 mm. One of ordinary skill in the art cannot optimize what is not taught in JP ‘803. For this reason alone, the claimed thickness range cannot be obvious from JP ‘803 and the Section 103 rejection should be withdrawn.

Claims 1 and 13 are also not obvious from JP ‘803 for the following reason. JP ‘803 does not teach using a receiver body “sized such that when an optical fiber is set on a surface of said receiver body opposite to said cutting blade the length of the optical fiber is longer than the thickness of said cutting blade.” For these reasons alone, the Section 103 rejection should be withdrawn.

For all of the reasons advanced above, Appellants submit that the claimed invention is not obvious over JP ‘803 and therefore withdrawal of the Section 103 rejection is respectfully requested.

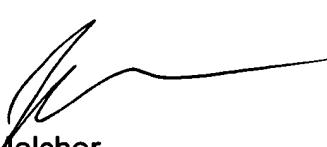
Conclusion

In view of the lack of *prima facie* case of obviousness, the many differences between the claimed invention and the cited references, and the unexpected advantages of the claimed invention, it is believed that this application clearly and patentably distinguishes over the combination of the cited references and is in proper condition for allowance. Accordingly, Appellants respectfully request that the Board allow claims 1-14 over the cited references.

Respectfully submitted,

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APPENDIX

1. (Previously Presented) A device for removing a covering layer of an optical fiber, the device comprising:

a receiver body for receiving an optical fiber having a covering layer to be removed; and

a cutting blade adaptive to be relatively moved toward said receiver body for cutting the covering layer of the optical fiber, wherein said cutting blade comprises an elastic plastic, said cutting blade has an edge surface substantially perpendicular to side surfaces of the cutting blade, and said receiver body is sized such that when an optical fiber is set on a surface of said receiver body opposite to said cutting blade the length of the optical fiber is longer than the thickness of said cutting blade, and said cutting blade has a bending elasticity in a range of 900 - 20,000 MPa.

2. (Previously Presented) A device for removing a covering layer of an optical fiber, the device comprising:

a receiver body for receiving an optical fiber having a covering layer to be removed; and

a cutting blade adaptive to be relatively moved toward said receiver body for cutting the covering layer of the optical fiber, wherein said cutting blade comprises an elastic plastic, said cutting blade has an edge surface substantially perpendicular to side surfaces of the cutting blade, and said receiver body is sized such that when an optical fiber is set on a surface of said receiver body opposite to said cutting blade the length of the optical fiber is longer than the thickness of said cutting blade, and said cutting blade has a thickness in a range of 0.06 - 1 mm.

3. (Original) A device for removing a covering layer of an optical fiber according to claim 1, further comprising a guide means for guiding the optical fiber to a removing position between said receiver body and the cutting blade.

4. (Original) A device for removing a covering layer of an optical fiber according to claim 2, further comprising a guide means for guiding the optical fiber to a removing position between said receiver body and the cutting blade.
5. (Original) A device for removing a covering layer of an optical fiber according to claim 1, wherein the cutting blade has a thickness in a range of 0.06 - 1 mm.
6. (Original) A device for removing a covering layer of an optical fiber according to claim 5, further comprising a guide means for guiding the optical fiber to a removing position between said receiver body and the cutting blade.
7. (Original) A device for removing a covering layer of an optical fiber, the device comprising:

first and second cutting blades for cutting a covering layer of an optical fiber by moving toward each other, wherein each of said cutting blades comprises an elastic plastic, each of said cutting blades have edge surfaces substantially perpendicular to side surfaces of the cutting blades, and each of said cutting blades has a thickness in a range of 0.06 - 1 mm.
8. (Previously Presented) A device for removing a covering layer of an optical fiber, the device comprising:

first and second cutting blades for cutting a covering layer of an optical fiber by moving toward each other, wherein each of said cutting blades comprises elastic plastics, each of said cutting blades have edge surfaces substantially perpendicular to side surfaces of the cutting blades, and each of said cutting blades has a bending elasticity in a range of 900 - 20,000 MPa.
9. (Original) A device for removing a covering layer of an optical fiber according to

claim 7, further comprising a guide means for moving the first and second cutting blades toward each other so that edges of the cutting blades face each other.

10. (Original) A device for removing a covering layer of an optical fiber according to claim 8, further comprising a guide means for moving the first and second cutting blades toward each other so that edges of the cutting blades face each other.

11. (Presented Previously) A device for removing a covering layer of an optical fiber, the device comprising:

first and second cutting blades for cutting a covering layer of an optical fiber by moving toward each other, wherein each of said cutting blades comprises an elastic plastic, each of said cutting blades has an edge surface substantially perpendicular to side surfaces of the cutting blade, and each of said cutting blades has a thickness in a range of 0.06 - 1 mm and a bending elasticity in a range of 900 - 20,000 MPa.

12. (Original) A device for removing a covering layer of an optical fiber according to claim 11, further comprising a guide means for moving the first and second cutting blades toward each other so that edges of the cutting blades face each other.

13. (Previously Presented) A device for removing a covering layer of an optical fiber according to claim 1, wherein a length of the cutting blade and the receiver body are always substantially parallel.

14. (Previously Presented) A device for removing a covering layer of an optical fiber according to claim 2, wherein a length of the cutting blade and the receiver body are always substantially parallel.